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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/647,163

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Hui-Ling Lou

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EXAMINER

NGUYEN, HANH N

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

12/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/647,163

Applicant(s)

LOU ET AL.

Examiner

Hanh Nguyen

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed 9/13/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-27, 29-51, 53-75 and 77-104 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-27, 29-51, 53-75 and 77-104 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 September 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 101

Claim 73 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding claim 73, it is required that "an information carrier" that embodies "a computer program product" be a physical hardware such as a computer readable memory storing the computer program product. In addition, Examiner believes "a computer program product" is not described in the specification.

Claims 74, 75, 77-96, 103 and 104 are also rejected because they depend on claim 73 respectively.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5-27, 29-51, 53-75, 77-104 are rejected under 35 USC 103(a) as being unpatentable over Kadous (US Pat. 6,996,195 B2).

*In claims 1, 7, 8, 25, 31, 32, 49, 73, 79, 80, Kadous discloses a method of obtaining channel estimates (see Abstract; channel estimation using OFDM) comprising receiving a preamble across a channel, the preamble including two or more training sequences (see fig.1, col.4, lines 50-65; receiver 100 receives a signal $r(t)$ over a radio channel. The signal comprises

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training sequences [A,B] and [C,D] transmitted from antennas Tx1 and Tx2; see col.5, lines 30-55, Further in fig.5, the training sequences are extracted from preamble of data burst; see col.9, lines 55-60); performing a Fourier transform of the training sequences (see fig.1A, col.4, line 60 to col.5, line 5; FFT 34 converts the signal from time domain to frequency domain); deriving initial channel estimates in the frequency domain with the received preamble and a stored preamble (see fig.2; col.5, lines 15-20; channel estimator 36 receives frequency domain signal and determine channel estimation with a stored training sequence in buffer 54(fig.2)); receiving data symbols across the channel (see fig.1, col.5, lines 35-40; the received training sequences of length N inherently include data symbols as being well-known in the art); demodulating and decoding the data symbols (see fig.1; col.4, lines 50-65 and col.5, lines 10-12; demodulator 44 and decoder 50 demodulates the signal to reproduce the original signal).

Kadous does not disclose updating the channel estimate using the demodulated and decoded data symbols. Since it is not specifically described how the claimed “ updating the channel estimation” is performed, therefore, “updating the channel estimation” is broadly understood as “ repeating the channel estimation” after demodulating, decoding the data symbols

Chuang et al. discloses updating the channel estimate using the demodulated and decoded data symbols (see fig.1A, col.2, lines 5-20; at receiver 140, transformed signal after being demodulated, decoded is fed back to channel estimator 165 which repeats the signal channel estimations, demodulations and decode). Therefore, it would have been obvious to one skilled in the art apply the teachings of Chuang et al. into Kadous to update the demodulated and decoded

data symbol by using channel estimation. The motivation is improve channel quality such as minimize error rate of received data symbol.

In claims 18, 42, 90, Kadous disclose that the data symbol is decoded using Viterbi algorithm (see fig.1, Viterbi decoder 50).

In claims 2, 17, 26, 50, 74, the limitation has been disclosed in claim 1 (See claim 1, Chuang et al. fig.1A, receiver 140).

In claims 19, 20, 21, 22, 24, 43, 45, 46, 48, 91, 93, 95, 97, Kadous disclose exponential update, least mean square update (see fig.2, least mean square estimator 56).

In claim 41, the limitation of this claim has been addressed in claim 1.

In claims 98-104, Kadous does not explicitly disclose the channel estimation is compliant with IEEE 802.11a, IEEE 802.16a. But the OFDM channel estimation of Kadous is inherent to be compliant to IEEE 802.11, 802.16a.

In claim 11, kadous discloses interpolation channel estimation (see fig.1, interpolator 60).

claims 5, 6, 9-16, 23, 27, 29-51, 53-72, 75-78, 81-89 are also rejected due to their dependency to parent claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Crawford (US Pat. 6650616 B2);

Ojard et al. (US Pat. 6,892,075 B2);

Cho et al. (US pat. 7068593 B2).

Response to Arguments

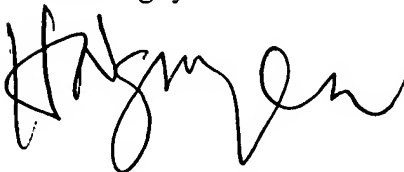
Applicant's arguments with respect to claims 1-3, 5-27, 29-51, 53-75 and 77-104 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Nguyen whose telephone number is 571 272 3092. The examiner can normally be reached on Monday-Thursday from 8:30 to 4:30. The examiner can also be reached on alternate

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Field, can be reached on 571 272 2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hanh Nguyen

A handwritten signature in black ink, appearing to read 'Hanh Nguyen', written in a cursive style.

**HANH NGUYEN
PRIMARY EXAMINER**